it can be avoided the risk of sensitizing an individual to serum is obviated. In such institutions as large hospitals and orphan asylums it becomes a procedure of importance. Moreover, the degree of exposure to the infection is as a rule not so great in institutions as it is in the home, and there is less objection to waiting for the necessary time to elapse for the development of the Schick reaction.

While there are other methods of determining the native immunity of a child by the estimation of the amount of antitoxin contained in the blood, the technic is too involved for ordinary purposes. The Schick reaction gives a sufficiently accurate estimation of immunity. Those individuals found which show no reaction may be considered immune and in those where the reaction is positive the question arises as to the preferable kind of immunization. Passive immunization induced by the use of anti-diphtheritic serum may be used to tide over an emergency as where, for example, in children the contact has been intimate or the virulence of the disease renders immediate action advisable. However, the immunity thus induced must be considered only temporary. Active immunization by means of the toxin-antitoxin method as elaborated by Park and Zingher (Active immunization with diphtheria toxin-antitoxin, W. H. Park and A. Zingher, Journal Amer. Med. Assn., Vol. LXV, Dec. 25, 1915, p. 2216) from a theoretical standpoint is desirable as the immunity conferred is probably permanent and the results so far obtained are most promising, although at present this method is still in the experimental stage. Park and Zingher advise for the general prophylaxis against diphtheria in schools and communities, excluding immediate contacts, a mixture of toxin-antitoxin alone (from 85 to 90 per cent. of the L + dose toxin to each unit of antitoxin) or toxin-antitoxin + vaccine of killed diphtheria bacilli. The dose of 1 c.c. of toxin-antitoxin and 1,000,000,000 bacteria is injected subcutaneously and repeated three times at intervals of six or seven days. Results of adding the injections of bacilli to the toxin-antitoxin are not yet available. Their records, however, upon immunization with toxin-antitoxin alone indicate that their methods would ultimately be as successful in establishing human immunity as was the work of Park in 1902 in the immunizing of guinea pigs, goats and horses, and that the application of the method would find special adaptation as indicated by them in children in schools and orphan asylums, mothers and infants in lying-in places, physicians, nurses and ward workers in contagious disease hospitals and patients in general and contagious disease hospitals.

Discussion.

Dr. Howard Dixon: I would like to ask one question. I have a patient, a young man of 28, to whom I gave 20,000 units of antitoxin: 10,000 in the morning and 10,000 in the evening. The membranes cleared up in about a week's time, but the man is still carrying diphtheria bacilli. He does not want his tonsils removed, and I am trying iodized phenol, as recommended by Ott and Roy in the J. A. M. A., Mar. 11, 1916. If Dr. Ebright can enlighten me as to what to do, I shall be much obliged.

Dr. Cullen F. Welty: As to diphtheria carriers, it has been proved at our local Isolation Hospital that people who have had their tonsils removed are not diphtheria carriers. In other words, no diphtheria carriers have been admitted to the Isolation Hospital who have had their tonsils removed.

The only way to get rid of a well established infection of the throat is to take out the tonsils.

Dr. Ebright, closing discussion: I should say that if more antitoxin had been given in the first 24 hours the results would undoubtedly have been better. In mild cases or in any case where the disappearance of the membrane seems to come to a standstill it is advisable to give 10,000 to 20,000 units more, depending upon the case. It is my impression that the best course to pursue to prevent a patient becoming a carrier is to give large doses of antitoxin and effect a cure as rapidly as possible, otherwise the diphtheria bacilli appear to acquire a kind of immunity. There appears to be no satisfactory way of dealing with carriers except maintaining them in quarantine until time shall have corrected the condition.

PSYCHOGENIC FACTORS IN ORGANIC DISEASE.*

(Illustrated by two cases.)

By C. W. MACK, M. D., Assistant Physician Livermore Sanitarium; Formerly Assistant Physician Agnews State Hospital.

These two cases of organic nervous disease are instructive because of the pronounced disability arising from purely neurotic conditions. The evidences of organic disease were sufficient to make a definite diagnosis, but not enough to explain the total disturbance of function. Our attention is thus called to the importance of considering the psychic element in organic cases as well as those which are included among the so-called functional disorders.

Case I.† (E. H. S.) General Paralysis of the Insane in which an astasia abasia is removed after one month of treatment.

This patient was admitted to the Agnews State Hospital November 17th, 1914. Age 41. He had a common school education and had been engaged in commercial pursuits until the time of his disability. The psychosis necessitating his commit-

* Read before the Alameda County Medical Society, December 21, 1915.

† This case is reported through the courtesy of Dr. Leopard Stocking, Medical Superintendent, Agnews State Hospital.

ment had been in existence about one year. He developed delusions which persisted and assumed quite an extravagant nature before he was finally sent to the hospital. He was frequently irritable and finally became so noisy and violent that he could not be controlled. In August, 1914, he had a convulsive seizure accompanied by loss of consciousness. This stuporous condition continued for about twenty hours after which he gradually regained consciousness, but for a number of days he was rather confused. No paralysis followed this convulsion but there was a more rapid progress of the mental trouble.

In addition to the mental symptoms which brought the patient to the hospital he had been unable to walk for eight years because of a very peculiar disturbance of gait. He walked by moving his feet from side to side and this only when supported. This disability followed an injury received in a railroad accident and persisted even after damages were collected from the railroad company. The patient recalls only a few details of the wreck. He was thrown forward, his shoulder striking against the door of the car, and then no events are recalled by the patient until those beginning in the hospital. He was taken to a hospital, where the attending physician found no bruises or marks on the body, although the patient was complaining bitterly of pain. For a number of days he was very excitable and did not sleep even after the administration of large doses of sedatives. The merest touch would cause the patient to scream, so a detailed examination was not made. It was determined, however, that there were no fractures or paralyses. During his stay in bed he could move the legs, and no particular attention was called to them. He was in bed about two months and then, when allowed to get up, it was found that he was unable to walk. There was also some trouble with the left arm, which had been bandaged and secured in a flexed position. Any attempt to move it always caused a great deal of pain. The arm remained in flexion for some time after his discharge from the hospital, even when all dressings had been removed. It gradually relaxed in the course of a few weeks so that proper function returned except for a contracture of the three outer fingers of the left hand. The ability to walk, however, did not return and he was never able to move about unassisted. When trying to stand he invariably experienced a feeling of being at the edge of a precipice over which he was about to fall. He gradually acquired a means of locomotion by moving his feet sideways instead of forward so that with the use of two canes he managed to get about the house and sometimes out of doors. Various methods of treatment were tried by the patient and his family but he did not improve beyond this stage.

Examination: The patient was decidedly euphoric and manifested flighty ideation and delusions. He spoke of wonderful healing powers and boasted of the many spectacular things which he planned to do. There were also delusions of wealth.

The most noteworthy thing about the physical examination was the disturbance of gait and the neurological findings. He said that he could not walk and when asked to do so he did not move the feet forward but turned the body and moved the feet sideways. In this way he moved about the room while being supported. At first when standing with the eyes closed he swayed a great deal and would have fallen if not supported. A second attempt, however, and he was able to stand alone. He never attempted to leave the bed unless there was some one to assist him.

Examination also disclosed contracture of three outer fingers of the left hand at the first and second distal joint. The patient complained of pain in the back and said that the lower ribs were broken loose from the spine at the time of the accident and were still causing pain. Examination of the back, however, was negative. The patient performed flexion and extension at the hips, knees and ankles, also external and internal rotation of the legs. No muscular atrophy and no spasticity. The pupils were equal. The left reacted slowly and in very narrow limits to light. The right reacted more quickly. Both pupils reacted in accommodation. The corneal reflex was present on each side. The left biceps tendon reflex was absent, the right present. Abdominal reflexes present. Both knee jerks were present and equal. No Babinski, Gordon or Oppenheim. Chaddock's toe sign was present on both sides. There was no disorder of the special senses with rough tests. No disturbance of skin sensibility discovered. Sense of position and motion was present in the toes and ankles.

Spinal fluid examination showed a lymphocytosis of 84. Noguchi butyric acid test xxx., fluid Wassermann xxx., blood serum Wassermann xxx.

Diagnosis: General paralysis of the insane with hysterical astasia abasia.

The patient proved to be very amenable to suggestion and was told that by proper training and exercises he would be able to walk. In his extremely elated state of mind he reinforced these suggestions and stated that his own determination could accomplish anything and overcome all obstacles. Each day he was given an electric cabinet bath followed by general massage. The first improvement noted was that he could walk by taking a position directly behind the nurse, placing his hands lightly upon his shoulders. With this assistance he would walk quite rapidly across the floor. The patient soon discovered that he could stand alone and then each day he was instructed to practice by taking very short steps. Emphasis was laid upon the fact that it was necessary for him to re-learn to walk and that this could be done in the way outlined. He became very proud of his accomplishment and every day it was noticed that he was walking more rapidly. At the end of a month his inability to walk had entirely disappeared and he was even able to attend dances. Except for a few weeks of inactivity following a slight injury to his knee, the patient has been walking naturally up to the present time, which is about nine months after treatment began.

The man is still in the hospital, as his mental condition is such that he cannot live at home. The dementia paralytica has remained stationary for about three months after the initial elation subsided. The physical signs of the disease have not multiplied and he is still an ambulatory patient. The mentality is not yet grossly impaired but delusions are still present, as well as emotional instability and childlike conduct.

This patient recovers his power of locomotion after being incapacitated for a period of eight years. Other means, such as drugs, Osteopathy, Christian Science, etc., had already failed and had been discontinued many months before his admission to the hospital. It is true that this change was brought about after the development of typical paresis but there was still enough mentality to be influenced by psychotherapy. The changes in the individual's personality, as a result of the organic brain disease, produced such an alteration in his previous habits of thought that the psychic readjustment, necessary for the removal of the hysterical symptoms, was comparatively easy. The patient was in very buoyant spirits and believed implicitly in his own power and ability to overcome all difficulties. In this mood he quickly grasped suggestions and carefully followed the physician's directions. During his sojourn in the hospital he occasionally developed

other symptoms which were easily removed by the same methods. He frequently had pains in the back, which were not girdle pains due to posterior root irritation, but something which he ascribed to the supposed injury of the ribs. These pains were easily removed by an examination and suggestive methods.

The disappearance of the neurotic condition was not due to the failure of memory so frequently found in this disease, as he had a very keen recollection of the various details of the difficulties encountered as a result of his infirmity. This he often described with a great deal of emotion. In other words the belief which had been so firmly implanted in his mind that he could not use the legs, was not obliterated by the pathological changes in the brain. The accident was often spoken of and he seemed to take delight in describing the disaster that had come to him as a result of it. He was very optimistic, however, and dwelt upon the serious nature of his trouble in order to demonstrate his present powers of recuperation. It illustrates how the emotional factor in a patient's constitution can operate for or against the recovery from neurotic symptoms.

Case II. (T. W. E.) Hysteria in a patient with spinal cord changes due to anemia. Admitted to the Livermore Sanitarium, June 28, 1915. The patient comes for treatment because of paralysis of the legs and inability to walk.

Abstract of History: Age 50 years. His occupation had been that of a merchant but lately he has not been very active in business. The family history is not noteworthy for any familial diseases. The father died of dropsy and one brother is eccentric. Before the present illness began the patient had no serious sickness aside from the ordinary childhood diseases and constipation, which latter has necessitated the habitual use of laxatives.

The present trouble began about three years ago following what is spoken of as a bilious attack. This stomach disturbance continued for a number of days and finally he became so weak that he could not work. To relieve the supposed abdominal trouble a gastro-enterostomy and appendectomy were performed. This operation was about a year and a half before his admission to the sanitarium. The patient made a fairly good recovery from the operation but his condition was not much benefited. He began to complain of numbness in the hands and arms, which later disappeared, but the same symptoms developed in the legs. The gastric trouble and constipation continued. He also had a few night sweats but has never had a cough or indication of pulmonary trouble. The sensory symptoms in the arms alternated with their presence in the legs, increasing in intensity and sometimes accompanied by prickling sensations. The legs gradually became helpless so that he was not able to walk at all for about six months before his admission to the sanitarium.

Physical Examination: At the time of the first examination the patient was apparently quite helpless, being unable to move about in bed without assistance. The general physical examination of the chest was negative. No cardiac abnormalities discovered except slight increase of dullness to the left. Systolic blood pressure 110. Diastolic 80. Urinalysis negative. Blood examination,—White cell count, 5920. Red cell count, 3,300,000. Hemoglobin 85%. Differential count,—Polynuclears 65%; small lymphocytes 29.4%, large lymphocytes 4.2%. Eosinophil 1.2%. No nucleated red cells. Some poikilocytosis. Red cells vary somewhat in size but no extreme types of microcytes or macrocytes. The large type of cell predominated.

Neurological Examination: The face was slightly wrinkled. He wrinkled the forehead equally well on each side and drew up the corners of the mouth without any indication of paralysis. Palpebral fissures equal. Extraocular eye movements normal. No nystagmus. No scanning speech. Tongue median and steady. No facial tremor. The pupils measured 2½ millimeters in a moderate light. Both reacted to direct and consensual light stimulation; the left more actively than the right. Both pupils reacted during accommodation. Fundus examination negative. Disk was a trifle pale in color but the physiological cupping was not increased.

The musculature over the body was fairly well developed. No distinct atrophy. He performed all voluntary movements of the arms. No ataxia of the upper extremity. No intention tremor of the arms. No paralysis of the thoracic or abdominal muscles. When raised to the sitting posture in bed he supported himself and there was a normal amount of strength in the muscles of the back. The spinal processes were in proper alignment and there were no tender vertebrae. When the patient was first examined he was apparently not able to make any movement of the legs. When asked to move them he grasped the thighs with the hands, and in this way raised the feet off the bed. After being assisted to get out of bed and asked to walk he leaned far forward and pressed the toes tightly against the floor and remained standing while supported. When trying to walk he simply leaned forward, allowing the knees to flex with the toes dragging on the floor; typical astasia abasia. There was no atrophy or spasticity of the muscles of the lower extremity. When he was placed back in bed it was noticed that he moved the feet, performing external and internal rotation. His attention was immediately called to the fact that his muscles were not paralyzed. He was then urged to make an attempt to raise the legs without lifting on the thighs with his hands. The examiner held his hands slightly about the patient's toes and he was finally persuaded to raise the feet slowly, little by little, as the hands were raised, until he held them several inches above the bed. The right foot was not raised as high as the left. By means of another device the examiner succeeded in getting the patient to perform flexion and extension at the knees. The examiner grasped the muscles of the thigh, telling the patient that this assists greatly in movement, with which the patient immediately drew the feet well up on the bed until the legs were completely flexed. In this way it was finally determined that there was no paralysis of any muscle group except slight paresis of the extensors of the right foot. It was not possible to induce the patient to bring about much extension of the right foot. The knee jerks were both slightly exaggerated. There was a typical slow Babinski on each side.

Sensory examination did not reveal anything very noteworthy. The pain and tactile sensibility were present equally well on each side of the body. There was some confusion about the interpretation of tactile stimuli over the buttocks and perineum in the region of the distribution of the nerves from the lower spinal segments. No definite areas of anesthesia could be marked out, however. Vision and hearing were normal with rough tests. Sense of position and motion of the right great toe was entirely lost but normal in the left and normal in both ankles and knees.

Spinal fluid examination. (July 1st, 1915.) White cell count 3 per cu. M.M. Noguchi butyric acid test, negative. Wassermann reaction (August 16, Dr. Boalt). Serum Wassermann, negative. Fluid Wassermann. negative.

Clinical History: During the first week of the patient's residence he was in bed most of the time, receiving very little treatment while the various examinations and observations were being made. The organic nervous disease made a rather inter-

esting problem in diagnosis. The lesions were evidently central and in as much as multiple sclerosis could probably be excluded, they were looked upon as spinal cord changes produced by the anemia. This was not a typical pernicious anemia but it approached that type.

The treatment prescribed consisted largely of exercises, medication and diet to correct the anemia, and psychotherapy. The patient gradually became interested in the various muscle exercises and was surprised at the various things he could do. Of his own accord, he would spend considerable time every morning making the various movements of his legs. He talked a great deal about his inability to walk and was always afraid to trust himself to step off alone because of "weak back." He placed great emphasis on the fact that in the early part of the trouble, in attempting to walk he had fallen, injuring his back, which has since prevented him from standing erect and walking properly. This experience was very much in the patient's mind, as he often spoke of it. At the end of four weeks he had made progress in regaining the use of his legs. He was walking about on crutches, something he had not been able to do for a number of months. He stepped off with the left leg quite naturally and dragged the right. While sitting in a chair, however, he could raise this foot off the floor. The blood examination at this time did not show any improvement in the blood picture. The neurological condition had not changed except the improvement in gait. On some occasions he failed completely to move the legs but usually by strong suggestion he became more confident and was soon able to use them as before. The difficulty in using the right foot was very prominent in the patient's mind, and an examination, with the patient in bed, in regard to this matter, showed a distinct Hoover's sign of hysteria. That is, a failure to exercise downward pressure with the unparalyzed foot, when he attempted to raise the one which was paralyzed. The right foot was quickly raised from the floor when suddenly pricked with a needle. The Babinski sign was invariably found at all examinations.

Up until the time of the patient's discharge, four weeks after his admission, he gradually improved until he could walk quite well with the use of crutches. A report from him three months later was to the effect that he still used the crutches but was able to walk about the house and do much to help himself.

This is another case in which the leading symptom and cause of disability in an organic nervous disease was something apart from the real organic disease. The patient originally was not looked upon by his family as a nervous or hysterical individual. The process of development of the condition presented could be theorized in this way: The real disease centered the patient's attention much upon himself. In the beginning there were some real paraesthesias and some muscular weakness due to the cellular changes in the cord, probably produced by the anemia. These were strong suggestive stimuli to a mind already discouraged by sickness. These symptoms being always present soon caused the patient to restrict his activities, then to find reason for not being able to walk and finally produced a condition of complete helplessness.

One naturally hesitates to designate as hysterical, part of a symptom complex in the presence of a real organic disease. It would be more logical to explain, if possible, all disturbances of function on the basis of the discoverable histological changes. The case cited, however, cannot be entirely analyzed in this way as the impairment of locomotion is entirely out of proportion to the evidence of disruption of the motor apparatus. The detailed study of the muscular power disclosed no real paralysis of any group of muscles used in walking. The patient was able to execute with fair amount of strength all voluntary movements of the lower extremities except extension of the right foot, and this was at times possible. The improvement in the patient's gait was brought about entirely by suggestion and persuasion as other measures produced no appreciable change in the evidence of the organic disease.

Although Case II was not entirely cured of the hysterical symptoms, the condition was so much benefited by the above methods that there is reason to believe that success would have resulted if treatment had continued a sufficient length of time. In treating the patient one often felt the need of some spectacular thing which would suddenly change his mental attitude to one of determination and cross the short distance between inability to walk and perfect power of locomotion.

This brings us to the discussion of the broader subject of the relation of symptoms both subjective and objective to the pathology of disease. Our two cases are definite examples of functional disorders complicating the clinical entity due to a known pathological change. There are undoubtedly many cases in which this combination is not so evident and not being properly interpreted, lead us into errors of prognosis and cause failure in treatment. Such problems are met not only in neurology but in all branches of medicine. The work of the gynecologists has taught us many such lessons. It is now well known that the correction of uterine displacements does not always relieve the nervous woman of the many symptoms attributed to this abnormality. In another field of medicine cases of nervous dyspepsia furnish examples of excess of symptoms over pathology. Such patients may have some real gastric disturbance which by attracting their attention to that particular function leads to the adoption of a restricted and exclusive diet invariably producing a chronic constipation with its train of symptoms. A splanchnoptosis may be an abnormality but the problem remains to determine the relationship that it bears to the disturbances of function. Is it not possible that our zeal to locate diseased organs by physical examinations causes an over-estimation of the significance of the lesions found and the assignment of the whole group of symptoms to something responsible for only a part of them? A close study of the symptoms is necessary, evaluating each one, arranging them in their proper order of importance without regard to the order already established in the patient's mind.

Another phase of the subject worthy of consideration is the study of patient's natural disposition, learning, if possible, something of the mental life antedating the illness. As yet little is known of the intricacies of mind development and the classification of personalities but we do know that some individuals react in a peculiar way to experiences that are common to all. Every episode

as it becomes associated in the mind calls forth a particular emotional state which is determined by previous experiences. This constitutes a reaction peculiar to the individual, but certain types can be recognized. Among these are those whose habits of thought are such that they lack the power of adjustment. The mind is so accustomed to reflex action that independent thought is replaced by suggestibility. Certain complexes are formed so that states of mind productive of somatic symptoms originate with the slightest stimulus. Many individuals live in comparative comfort with some serious organic disease present which does not lead to symptoms until, in some way, their attention is called to it. Those, whose mental makeup is susceptible, will then react in an abnormal way, producing a neurosis in addition to the real symptoms of the disease. It is in this way that symptoms, dependent upon real organic changes, can have a strong auto-suggestive influence and very appreciably alter the group of symptoms which, according to our knowledge of pathology, should really be present.

These ideas do not reveal any new truths, as it has long been recognized that the patient's faith in a physician is an important element helping to restore the individual to health. Instead of the physician depending upon the blind faith of the patient, it would be more scientific if the situation was clearly understood by both physician and patient. The symptoms should be thoroughly analyzed and psychotherapy employed not only in purely functional conditions but also in the incurable organic diseases. Many symptoms, which in the patient's mind are part of the disease picture but are in reality only neurotic disorders, could be removed. It is possible that chronic patients would be helped and sometimes relieved of distressing symptoms instead of drifting into the hands of the various cults and untrained healers. A case with grave organic lesions which we know cannot be cured often receives temporary benefit by such popular methods, much to the discredit of the medical man who has given the patient up as hopeless. The mechanism of this improvement is not understood by the laity so such a case is heralded as a cure and attracts other sufferers, having true psychoneuroses, which may then be cured permanently. The physician's neglect of the psychic element gives an opportunity for the frequent improvement of a tabetic when some new and spectacular treatment is used and the sudden ability of cripples to walk when visiting some famous shrine.

When failure is met in a patient with a neurosis we are led to ask ourselves what more can be done to change the mental attitude of a patient towards the symptoms which should, but do not, respond to psychic treatment. A brain injury such as in Case I cannot be produced for this purpose nor can one always induce an emotional shock which, as is well known, alters a mental state, causing a neurosis as quickly as it will precipitate such a condition in a person predisposed to such a transformation. It is possible, however, to cultivate the benefit derived from a judicious manipulation of the patient's emotional life. The fundamental instinct., i. e., preservation of life, is often in a way unknown to the patient, the basis for many neurotic disorders. The fear that the particular symptom portends a fatal disease causes the patient to keep alive the inhibition of functions which constitutes the manifestation of disease. The assurance that the particular disorder has no serious import and reiteration of this assurance creates hope and such a changed state of feeling, that a definite therapeutic response can be elicited. Each patient requires individual study in order to determine the particular mental complex which is producing the symptoms and work out the method of psychotherapy which will enable the patient to make the proper mental adjustment.

In conclusion then, the two cases reviewed should call attention to certain facts which may be summarized as follows:

1. Psychogenic disorders may co-exist with organic disease.

2. An organic disease may declare itself during the course of a functional ailment and greatly confuse the symptom complex or the order may be reversed, in which case the organic disease may have a strong auto-suggestive influence and produce psychogenic symptoms in an individual so predisposed.

3. More information is needed concerning the relation of pathology to function so that psychogenic factors may be recognized.

4. The treatment of psychic symptoms found in combination with an organic disease by suggestion and presuasion, is next in importance to the diagnosis as the major disability may be removed in those cases in which the real disease is producing slight disturbance of function.

Discussion.

Dr. Podstata: Mr. President and Members of the Society. It would be a serious blunder, should we begin, in any case under our observation, with the assumption, that the psychogenic factors are of greater importance than the organic factors. After all, material etiology and pathology constitute the foundation upon which rests the science of medicine.

However, it is almost as great a mistake to neglect the mental part of the biological unit, called man. The psychic sphere is a part of him and reacts upon the other. As surely as toxic agents in the blood produce certain changes in the nervous system; as an injury will produce structural changes in the brain and the spinal cord and through it a change in the mental or nervous functions—so also an emotional strain may produce not only a temporary change in the functional mental activity, but it may actually change the protoplasm and indeed the nucleus of the neuron. The work of Crile and of other men has demonstrated, beyond any question, that fright, or any severe emotional strain, may kill a nerve cell as effectually as does direct poison.

In considering the important psychogenic factors it is best to classify them. First of all we have to consider "personality." By personality I mean, in this instance, the particular type and capacity for reaction of an individual to his surroundings, including somatic impressions. This reaction is frequently inadequate or abnormal.

Professor Adolf Meyer classified a number of these abnormal reaction types, the individual make-

ups of personality. To analyze all these types fully would lead us too far away from the purpose of this discussion. It may be well, however, to bring to your attention some of the more common of the abnormal reaction types. After considering these you will agree that an organic disease in a patient with some such abnormal makeup, will develop a decidedly different picture than in a normal individual.

First of all, and the most common, is the abnormal reaction type, which Dr. Mack referred to first—the psychasthenic and neurasthenic makeup. You are all too well acquainted with that type to require any detailed description of it.

The second type to be mentioned was referred to by Dr. Mack in his second, the hysteroid, case. In this makeup the emotions produce very powerful physical reactions, paralysis, motor and sensory, spasms, etc.

The third type has been designated by some, particularly by Dr. Moore of Los Angeles, as the shut-in makeup. It is quite a common type of personality. The person is found shut-in within self, retaining impressions with little or no immediate reaction. There is present a strong, shut-in emotional element, which later results in abnormal or perverted mental and physical activity.

There are other makeups, such as the explosive, the emotional oscillating, etc. They are often important, but we have not the time to discuss them.

In the second group of psychogenic factors, we have to consider the early influence of training in the family; the influence of education; the later influence of the struggle for one's existence. All these undoubtedly leave a great impression. They may modify the original inherited traits; at any rate, they complete the formation of personality.

Last of all we have to consider the so-called psychic traumas, of which we have an instance in the second case of Dr. Mack. There fright took possession of the patient and resulted in a paralysis, or at least, an increase in paralysis, through the influence of the emotion.

By recognizing these factors we can frequently clear up a case, which would otherwise be rather difficult. I do not believe a physician can better employ his spare time than by the study of psychogenesis in disease. The patient may not necessarily come to us with a nervous or mental disease. The course of any illness may be distorted as a result of various psychic factors, which cause an abnormal reaction of that individual to the given stress.

As we further develop the study of the individual reaction types, we shall be able to predict, approximately, what the individual will do under certain conditions. Also we shall be able to early discover abnormal tendencies in the development of personality.

I believe the time is near when every unusual child will be submitted to an analysis, a systematic search for the fundamental elements of the reaction type it presents. The results should be recorded in a comprehensive way, perhaps by means of a chart. Then when a large number of such studies is available, valuable deductions may be possible. I am now engaged in work of that kind. The difficulty is in the matter of recording, but undoubtedly a good way will be found.

Some such analysis will enable us to predict what dangers the child is especially exposed to and what reaction is likely to take place if certain harmful influences are met with. Therefore, it may aid us in the prevention of actual mental and nervous breakdowns and in the alleviation of much suffering.

At any rate, the greater will be our understanding of the original traits, mostly inherited; the more we shall know of the influences which the individual was exposed to from the earliest childhood up; the better will be our understanding of the various psychic traumas inflicted upon our patient, and among these we should especially note the emotional strains and sexual experiences,—the better we shall understand the situation and the symptom complex, and the more we shall be able to do for the patient.

Dr. Jau Don Ball: Mr. President and Members of the Society. The paper presented by Dr. Mack tonight, to my mind, certainly is a very valuable contribution to the science of psychiatry. Dr. Mack points out the faults that a great many of us are prone to overlook in our conduct towards our patients. Especially, are we entirely too apt to consider our patients suffering from organic disease as disease entities and without emotions and incentive actions. It is just as important to consider the mental or psychological side of patients as the physical.

Regarding Dr. Mack's conclusions based upon his cases, I can but add that it is also desirable that more information be gathered regarding physiological psychology which really is a problem of the sources and direction of psychophysical energy. The present-day aim is to determine the physical basis of processes of mentation. Accordingly, every process of ideation and incentive action implies the presence in the nervous system of a very complex, highly organized apparatus. Recent research seems to point to the basal ganglia and optic thalmus of the brain as the seat of such mechanism.

Dr. Mack's first case reminds me of a patient I had a number of years ago in consultation with Dr. Hamlin at the County Hospital. This patient, a Portuguese, was loading boxes of fruit into a box car, carrying boxes on his shoulder, and entering the box car from a platform. In the center of the car there was a hole in the floor. The man was walking around the hole, carrying the boxes until the car was filled approximately up to the opening in the bottom of the floor of the car. Finally, the man fell through the opening, catching on his shoulders. The weight of the boxes bore on his right shoulder, he was pulled through the hole, and was apparently paralyzed from the hips down—paraplegia, and also the right arm was paralyzed. He was taken to the County Hospital. Examination did not reveal any organic nervous changes. The question was, inasmuch as the injury was apparently rather severe—falling through an opening—whether or not there was some actual organic change, but the neurological examination was practically negative. Except for the increased reflexes the man was utterly unable to move the lower extremities or the right arm. On account of his inability to understand the English language, it was most difficult to suggest anything to him or to treat him. It was suggested, however, that he be given an anaesthetic to determine definitely whether there was an injury there, and accordingly he consented. Ether was administered, and during the excitement the extremities moved about freely. On the following attempt to repeat the demonstration, he became very much excited and voluntarily moved his legs and arms. The patient received his damages from the railroad, and I understand later improved. I have not heard from the case since. I mention that as a point because Dr. Mack in one case mentions a railroad accident and the neuroses occurring prior to the development of the organic disease. In this individual, it certainly would have been possible to develop a paresis if he had the germ of syphilis in his blood. Whether or not the neurotic or hysterical symptoms were present before the accident occurred to this man, we cannot say. In every individual suffering from hysteria or neurosis, we must take into consideration the triangle of life as we are wont to understand it; for example, heritage, environment, and education. We depend upon heritage, or heredity, to give most of our cases of neurotic tendency, environment and education, of course, influencing the individual. And as Dr. Podstata has mentioned in his discussion, with a careful study of these cases, especially in

children, from the standpoint of heredity, environment, and education, we ought to be able to recognize the types and prevent future development of nervous and mental diseases by proper early treatment and education and improving the heritage of the individual.

Dr. W. H. Strietmann: I do not think there is much to add to what Dr. Mack has said except to emphasize in a general way what has come home to me recently more than ever before. That is, we have, as men who are practicing medicine outside of the specialty of nervous diseases and psychiatry, absolutely neglected that field. It is something that should be presented to us in popular form. We have to be re-educated along that line. Recently I have been very much interested in Dubois' work on nervous diseases. It seems to me a very popular exposition of the things that we really ought to take unto ourselves. Among other things, Dubois points out, and I think very clearly, that the psychic phenomena are really a part of biology. It is a question whether we should use the term of psychophysiology or physiological psychology—whether the whole thing is not really a biological thing. We know that the lower animals, the amoeba, for instance, will react to stimuli of various sorts, a shaft of light, mechanical irritation, or what not. Of course, those are reflexes of a very low order. They are present in the human as well, but in the human there is the added feature of a mentality which the lower organisms do not possess. But I think it is reasonable to believe that everything we do, and I consider that is the general consensus of opinion among psychologists, is not done of our own free will but is done by reflex action, some response to an external stimulus. If that is true, it belongs in the domain of biology; and if it is we as physicians ought to be very much interested in it. Very frequently we meet with cases that have no definite lesion. Since I have been here, I have found a great many cases of gastroptosis and enteroptosis. As I think it over there is frequently a question whether or not they are functionally in bad shape. These patients with gastrointestinal trouble seem to do their work except for a colonic stasis, and while by treating them mechanically we do get some results, I wonder whether it is not very largely due to the fact that we are treating them also in a psychic way, very largely unconsciously. I do not know but what there is a great deal in that particular factor. Certainly, a definite percentage of the cases that we see do not improve by the ordinary mechanical things we do for them, for instance, a regulation of diet, and so on. Such cases should go to the psychologist.

We should have a little more popular material brought to us from this branch of medicine, and personally, I should be very glad to see it.

NEW SAN FRANCISCO HOSPITAL.

By DR. R. G. BRODRICK, Superintendent.

The new San Francisco Hospital is maintained by the city and county for the treatment of its sick poor. It is under the control of the Department of Public Health, which consists of a commission of seven members, four of whom are laymen and three physicians.

With the completion of the new general hospital, at an approximate cost of three and one-half million dollars, derived from the sale of bonds, San Francisco will have one of the finest and handsomest institutions of its kind in the United States. The hospital, when completed, will accommodate about 1,000 patients; hence the cost per bed amounts to about $3,500.

The late Mr. Newton J. Tharp designed the buildings and chose for the location of the main group the frontage facing Potrero avenue, a broad avenue on which is operated the municipal car line.

The hospital is located in what is known as the "Warm Belt" of the Mission, at the edge of the most thickly populated district of the city; it is situated on a rising elevation and covers four city blocks, 866 feet long and 760 feet wide. The tuberculosis and infectious groups will be situated on higher ground on the easterly portion of the property.

The buildings are so arranged that there is ample light and plenty of ventilation around each particular unit. In general, the type of construction is what is known as the corridor-pavilion, the buildings being connected by a main corridor in such manner that one can go from building to building without exposure to the elements.

The Italian renaissance style of architecture has been followed in designing the buildings, which are of the finest Class "A" fireproof construction possible for human skill to produce. The foundations are of concrete, waterproof and under-drained. The floor and roof construction is of reinforced concrete. The flooring throughout the offices and bedrooms in the administration building and in the nurses' home is of maple; in the wards and in the bedrooms of the service building the floors are covered with battleship linoleum cemented to the concrete. The operating rooms, treatment rooms, toilets, laboratories, etc., are finished with tile, and the floors of all corridors are of terrazzo. The exterior walls are of brick of rich color, laid in a very beautiful way, with terra cotta trim.

The grounds are extensive and present a park-like appearance, having ben laid out by Mr. John McLaren, the well-known designer of the beautiful gardens of the Panama-Pacific International Exposition, the entire area being enclosed by an iron grill fence and lighted at night by about forty ornamental electroliers.

The interior finish has been given careful study. All angles are rounded; baseboards are finished with sanitary cove; window-sills generally are of marble; all door and window frames are of wood; the doors are smooth and flush, without panels, and are painted with five coats of cream enamel paint, except in the administration building and in the nurses' home, where the doors are of quartered oak, natural finish; the plastering is of Keene's cement throughout and is covered with three coats of paint of a light buff color. The plumbing fixtures, of which there are over one thousand, are of vitreous ware; all pipes are placed in vertical pipe racks in such a manner as to be within easy reach when necessary.

Plate glass has been used in all windows, with the exception of a portion of the service building, power plant and laundry, where the panes are of sheet glass. All of the windows are covered with bronze screens.

The main group consists of ten buildings, begun in 1910 and completed May 1, 1915, when it was officially opened for the reception of patients. It has accommodations for 512 patients and is so constructed that 752 beds may be provided if found necessary. The main entrance is in the center of the Potrero avenue frontage, and persons entering or leaving the grounds are compelled to pass the gate house. The approach from the main entrance to the administration building is impressive, consisting of a series of terraces and stone stairways, on either side of which are lawns and flower beds. Provision is also made for ornamental fountains.

(By the courtesy of The Modern Hospital.)